

What is claimed is:

1. A multilayered construction suitable for forming capacitors which is formed by a process which comprises:
  - a) applying a first thermosetting polymer layer onto a surface of a first electrically  
5 conductive layer;
  - b) applying a central polymerizable layer onto a surface of the first thermosetting polymer layer;
  - c) applying a second thermosetting polymer layer onto a surface of a second electrically conductive layer; thereafter
  - 10 d) attaching the first electrically conductive layer to the second electrically conductive layer such that each of the first and second thermosetting polymer layers and the central polymerizable layer are positioned between the first and second electrically conductive layers; and thereafter
  - e) polymerizing said polymerizable layer;
  - 15 wherein each of said first thermosetting polymer layer, said second thermosetting polymer layer and said central polymerizable layer optionally further comprises a filler material.
2. The multilayered construction of claim 1 wherein at least one of said first  
20 thermosetting polymer layer, said second thermosetting polymer layer and said central polymerizable layer further comprises a filler material.
3. The multilayered construction of claim 1 wherein both of said first and second thermosetting polymer layers further comprise a filler material.
- 25 4. The multilayered construction of claim 1 wherein said central polymerizable layer further comprises a filler material.

5. The multilayered construction of claim 1 wherein each of said first thermosetting polymer layer, second thermosetting polymer layer and said central polymerizable layer further comprise a filler material.
- 5 6. The multilayered construction of claim 1 wherein said filler material comprises a material selected from the group consisting of ceramics, barium titanate, boron nitride, aluminum oxide, silica, strontium titanate, barium strontium titanate, quartz and combinations thereof.
- 10 7. The multilayered construction of claim 1 wherein said filler material comprises barium titanate.
8. The multilayered construction of claim 1 wherein at least one of said first thermosetting polymer layer, said second thermosetting polymer layer and said  
15 central polymerizable layer further comprises from about 1% to about 90% by weight of a filler material.
9. The multilayered construction of claim 1 wherein each of said first thermosetting polymer layer, second thermosetting polymer layer and central  
20 polymerizable layer further comprise from about 1% to about 90% by weight of a filler material.
10. The multilayered construction of claim 1 wherein the first electrically conductive layer and the second electrically conductive layer independently  
25 comprise a material selected from the group consisting of copper, zinc, brass, chrome, nickel, aluminum, stainless steel, iron, gold, silver, titanium, platinum and combinations thereof.

11. The multilayered construction of claim 1 wherein each of the first electrically conductive layer and the second electrically conductive layer comprises copper.
12. The multilayered construction of claim 1 wherein one or both of the first  
5 thermosetting polymer layer and the second thermosetting polymer layer  
comprise a material selected from the group consisting of an epoxy, a melamine,  
polyesters, polyester containing copolymers, a urethane, alkyd, a bis-maleimide  
triazine, a polyimide, an ester, polyarylene ethers, fluorinated polyarylene ethers,  
benzocyclobutenes, liquid crystal polymers, an allyated polyphenylene ethers,  
10 amines and combinations thereof.
13. The multilayered construction of claim 1 wherein both of the first  
thermosetting polymer layer and the second thermosetting polymer layer  
comprise an epoxy.  
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14. The multilayered construction of claim 1 wherein the central polymerizable  
layer comprises a polymerizable precursor of a polyethylene terephthalate, a  
polyethylene naphthalate, a polyvinyl carbazole, a polyphenylene sulfide, an  
aromatic polyamide, a polyimide, a polyamide-polyimide, a polyether-nitrile, a  
20 polyether-ether-ketone, or combinations thereof.
15. The multilayered construction of claim 1 wherein said central polymerizable  
layer comprises a polymerizable polyamide precursor.
- 25 16. The multilayered construction of claim 1 wherein said central polymerizable  
layer comprises a polymerizable polyimide precursor.

17. The multilayered construction of claim 1 wherein said central polymerizable layer comprises a combination of a polyamide precursor and a polyimide precursor.
- 5 18. The multilayered construction of claim 1 wherein each of the first and second electrically conductive layers have a thickness of from about 0.5 to about 200  $\mu\text{m}$ .
19. The multilayered construction of claim 1 wherein each of the first and second electrically conductive layers have a thickness of from about 5 to about 10  $\mu\text{m}$ .
- 10 20. The multilayered construction of claim 1 wherein each of the first and second thermosetting polymer layers have a thickness of from about 1 to about 15  $\mu\text{m}$ .
21. The multilayered construction of claim 1 wherein each of the first and second  
15 thermosetting polymer layers have a thickness of from about 1.5 to about 10  $\mu\text{m}$ .
22. The multilayered construction of claim 1 wherein the central polymerizable layer has a thickness of from about 1 to about 30  $\mu\text{m}$ .
- 20 23. The multilayered construction of claim 1 wherein the central polymerizable layer has a thickness of from about 5 to about 20  $\mu\text{m}$ .
24. The multilayered construction of claim 1 which has a capacitance of from about 100  $\text{pF}/\text{cm}^2$  to about 4,000  $\text{pF}/\text{cm}^2$ .
- 25 25. The multilayered construction of claim 1 wherein the dielectric constant of each of the first thermosetting polymer layer, second thermosetting polymer layer and central polymerizable layer is from about 3 to about 65.

26. The multilayered construction of claim 1 wherein the Tg of said thermosetting polymer layers is at least about 180°C.
- 5 27. The multilayered construction of claim 1 wherein the Tg of said central polymerizable layer is at least about 220°C.
28. The multilayered construction of claim 1 wherein each of said first and second electrically conductive layers comprise copper foils, each of said first and  
10 second thermosetting polymer layers comprise an epoxy and said central polymerizable layer comprises a polymerizable polyamide precursor, a polymerizable polyimide precursor or a combination of a polymerizable polyamide precursor and a polymerizable polyimide precursor.
- 15 29. The multilayered construction of claim 1 wherein each of said first and second electrically conductive layers comprise copper foils, each of said first and second thermosetting polymer layers comprise an epoxy, said central polymerizable layer comprises a polymerizable polyamide precursor, a polymerizable polyimide precursor or a combination of a polymerizable  
20 polyamide precursor and a polymerizable polyimide precursor, and wherein each of said thermosetting polymer layers and said central polymerizable layer further comprises a filler material.
30. The multilayered construction of claim 1 wherein said first thermosetting  
25 polymer layer is applied onto a surface of said first electrically conductive layer by coating, said second thermosetting polymer layer is applied onto a surface of said second electrically conductive layer by coating, and said central

polymerizable layer is applied onto a surface of the first thermosetting polymer layer by coating.

31. The multilayered construction of claim 1 wherein said first electrically  
5 conductive layer is attached to said second electrically conductive layer by lamination.

32. The multilayered construction of claim 1 in which at least one of the  
10 electrically conductive layers comprises a part of an electrical circuit.

33. A printed circuit board which comprises the multilayered construction of  
claim 1.

34. A process for forming a multilayered construction suitable for forming  
15 capacitors which comprises:

- a) applying a first thermosetting polymer layer onto a surface of a first electrically conductive layer;
  - b) applying a central polymerizable layer onto a surface of the first thermosetting polymer layer;
  - 20 c) applying a second thermosetting polymer layer onto a surface of a second electrically conductive layer; thereafter
  - d) attaching the first electrically conductive layer to the second electrically conductive layer such that each of the first and second thermosetting polymer layers and the central polymerizable layer are positioned between the first and  
25 second electrically conductive layers; and thereafter
  - e) polymerizing said polymerizable layer;
- wherein each of said first thermosetting polymer layer, said second thermosetting polymer layer and said central polymerizable layer optionally further comprises a

filler material.

35. The process of claim 34 wherein the first and second thermosetting polymer layers are applied as liquids onto the first and second electrically conductive  
5 layers.

36. The process of claim 34 wherein the first and second thermosetting polymer layers are applied as liquids onto the first and second electrically conductive layers and then at least partially dried.  
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37. A multilayered construction suitable for forming capacitors which comprises:  
a) a first electrically conductive layer, having first and second surfaces;  
b) a first thermosetting polymer layer, having first and second surfaces, on the first electrically conductive layer with the first surface of the first thermosetting  
15 polymer layer on the second surface of the first electrically conductive layer;  
c) a central polymerizable layer, having first and second surfaces, on the first thermosetting polymer layer with the first surface of the central polymerizable layer on the second surface of the first thermosetting polymer layer;  
d) a second thermosetting polymer layer, having first and second surfaces, on the  
20 central polymerizable layer with the first surface of the second thermosetting polymer layer on the second surface of the second surface of the central polymerizable layer; and  
e) a second electrically conductive layer, having first and second surfaces, on the second thermosetting polymer layer with the first surface of the second  
25 electrically conductive layer on the second surface of the second thermosetting polymer layer;

wherein each of said first thermosetting polymer layer, said second thermosetting polymer layer and said central polymerizable layer optionally further comprises a

filler material.

38. The multilayered construction of claim 37 wherein at least one of said first thermosetting polymer layer, said second thermosetting polymer layer and said  
5 central polymerizable layer further comprises a filler material.

39. The multilayered construction of claim 37 wherein each of said first thermosetting polymer layer, said second thermosetting polymer layer and said  
10 central polymerizable layer further comprises a filler material.

40. The multilayered construction of claim 37 wherein one or both of the first thermosetting polymer layer and the second thermosetting polymer layer  
comprise a material selected from the group consisting of an epoxy, a melamine,  
polyesters, polyester containing copolymers, a urethane, alkyd, a bis-maleimide  
15 triazine, a polyimide, an ester, polyarylene ethers, fluorinated polyarylene ethers,  
benzocyclobutenes, liquid crystal polymers, an allyated polyphenylene ethers,  
amines and combinations thereof.

41. The multilayered construction of claim 37 wherein each of said first and  
20 second thermosetting polymer layers comprise an epoxy.

42. The multilayered construction of claim 37 wherein each of said first and second thermosetting polymer layers comprise an epoxy and a filler.

25 43. The multilayered construction of claim 37 wherein the central polymerizable layer comprises a polymerizable precursor of a polyethylene terephthalate, a polyethylene naphthalate, a polyvinyl carbazole, a polyphenylene sulfide, an aromatic polyamide, a polyimide, a polyamide-polyimide, a polyether-nitrile, a



polyether-ether-ketone, or combinations thereof.

44. The multilayered construction of claim 37 wherein said central polymerizable layer comprises a polymerizable polyamide precursor.

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45. The multilayered construction of claim 37 wherein said central polymerizable layer comprises a polymerizable polyimide precursor.

46. The multilayered construction of claim 37 wherein said central polymerizable layer comprises a combination of a polymerizable polyamide precursor and a polymerizable polyimide precursor.

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47. The multilayered construction of claim 37 wherein each of the first electrically conductive layer and second electrically conductive layer comprises copper.

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